

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference PCT1604AP071r0s	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/04544	International filing date ( <i>day/month/year</i> ) 24.04.2002	Priority date ( <i>day/month/year</i> ) 24.04.2002
International Patent Classification (IPC) or both national classification and IPC A46B5/04		
Applicant FINBER S.P.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
 

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 12 sheets.

3. This report contains indications relating to the following items:
 

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand  24.11.2003	Date of completion of this report  30.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Cardan, C  Telephone No. +49 89 2399-8115 <div style="text-align: right;">  </div>

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 02/04544**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1, 2, 7-15 as originally filed  
3, 3a, 4, 4a, 5, 6 received on 29.04.2004 with letter of 29.04.2004

**Claims, Numbers**

1-42 received on 29.04.2004 with letter of 29.04.2004

**Drawings, Sheets**

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 02/04544**

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-42
	No: Claims	
Inventive step (IS)	Yes: Claims	1-42
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-42
	No: Claims	

2. Citations and explanations

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/EP02/04544

**Re Item V**

Document DE 100 33 849 A (D1) , considered as the most relevant prior art, discloses a tooth-cleaning device according to the preamble of claim 1.

The subject-matter of independent claim 1 differs with respect to D1 by the characterising portion, i.e. the dispensable substance being impregnated in the said main body.

None of the prior art documents, or combination of documents, cited in the search report leads the person skilled in the art to this particular embodiment.

Hence, independent claim 1 can be considered as fulfilling the requirements of Art. 33(1) and (2) PCT.

user is used to chewing; the ball is not displaced all around inside the mouth leaving several places excluded from the cleaning action of the ball.

Another example of a tooth cleaning device adapted to be displaced within the mouth by means of the tongue is known from document DE 10033849.

This being the situation it would be highly desirable to have an improved tooth-cleaning device overcoming or at least partially limiting the drawbacks of the prior art.

#### SUMMARY OF THE PRESENT INVENTION

Generally, the present invention is directed to an handless cleaning device which can be easily displaced all around inside the mouth, thus allowing excellent cleaning results to be obtained.

In particular, the tooth-cleaning device according to the present invention allows dental plaque to be efficiently removed and/or prevented.

Moreover, the tooth-cleaning device of the present invention allows teeth to be cleaned while exploiting daily activities and is therefore of practical use and not time consuming.

Additionally, the inventive tooth-cleaning device does not require the use of hands and/or arms and can therefore conveniently be used by disabled people with not upper body mobility.

The tooth-cleaning device of the present invention does not require water and can be discarded once the cleaning process has been completed.

Finally, the tooth-cleaning device according to the present invention can be shaped so as to meet the particular requirements of the user. The user can select the most preferred shape allowing the tooth-cleaning device to be efficiently displaced all around inside the mouth. The shape can even be modified during the cleaning process, allowing the user to exploit different cleaning purposes during a single cleaning process.

-3a-

For this purpose, according to a first embodiment as claimed in claim 1, the present invention relates to a tooth-cleaning device comprising a main body and a plurality of

bristles carried by said main body, wherein the tooth-cleaning device comprises engaging means adapted to be engaged by the tongue and allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue. Moreover, said main body is adapted to receive a dispersible substance which is naturally dispersed during use. In particular, said main body is impregnated with said dispersible substance.

Preferably, said dispersible substance can be selected between a flavoring substance or a toothpaste or a therapeutic substance.

According to a preferred embodiment as claimed in claim 5, the main body of the tooth-cleaning device of the present invention is a hollow body comprising an inner cavity defining a receiving portion adapted to receive at least a portion of the tongue.

In another preferred embodiment as claimed in claim 9, the main body of the tooth-cleaning device of the present invention defines a through hole.

According to a still preferred embodiment as claimed in claim 10, said main body has a ring or doughnut shape.

In another preferred embodiment as claimed in claim 18, said main body is deformable so that it can be shaped so as to form engaging means adapted to be engaged by the tongue and allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue.

In particular, according to the preferred embodiment of the present invention as claimed in claim 21, the main body of the tooth-cleaning device comprises a flat strip adapted to be deformed so as to define a receiving portion adapted to receive at least a portion of the tongue.

According to the further preferred embodiments as claimed in one of claims 22 to 24, said flat strip can be deformed into a body having approximately a cylindrical shape, a thimble shape or a spherical shape.

-4a-

In a still preferred embodiment as claimed in claim 25, the main body of the tooth-cleaning device according to the present invention comprises an elongated body of an approximately barret-like shape.



For example, said elongated main body can be deformed into an approximately ring shaped or doughnut shaped body, or into an approximately square shaped body or a polygonal-like shaped body with a predefined number of sides.

According to a further preferred embodiment, the main body of the tooth-cleaning device of the present invention is filled with a liquid dispersible substance which is released, during use, through small passages provided in said body.

In another preferred embodiment as claimed in claim 35, the main body of the tooth-cleaning device of the present invention is formed by a resilient material and a string or cord is provided to be hand-held by the user, thus preventing accidental ingestion of the tooth-cleaning device. Preferably, said resilient material is selected between gum, silicon or resin.

Additionally, according to the still preferred embodiment as claimed in claim 37, the main body of the inventive tooth-cleaning device is inert, non-toxic and impervious to saliva.

According to another preferred embodiment as claimed in claim 38, adhesion improving means are provided to improve the adhesion of the tongue to the main body. Preferably, said additional improving means comprise resilient protrusions extending from the main body.

According to a further preferred embodiment as claimed in claim 42, the tooth-cleaning device of the present invention is embedded in a sweet or a drop or the like of a dispersible material adapted to be dissolved by the human saliva and/or by chewing.

Other preferred embodiments of the tooth-cleaning device according to the present invention are defined in the appended claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

Further advantages, objects and features of the present invention are defined in the appended claims and will become more apparent with the following detailed description when taken with reference to the accompanying drawings in which identical or corresponding parts are identified by the same reference numerals. In particular, in the drawings:

Figures 1a to 1f relates to a ring or doughnut shaped tooth-cleaning device according to a first embodiment of the present invention;

In Figures 2a to 2d there are depicted some preferred shapes of the main body of the tooth-cleaning device of the present invention;

Figures 3a to 3d relate to further preferred embodiments of the tooth-cleaning device of the present invention;

Figures 4a to 4d represent corresponding embodiments of the tooth-cleaning device of the present invention wherein the main body has a hollow spherical shape;

Figures 5a to 5d relate to a further embodiment of the present invention wherein the main body comprises a deformable, elongated barret-like main body;

In Figures 6a to 6d there are depicted some preferred cross-sectional shapes of the elongated barret-like main body of Figures 5a to 5d;

Figures 7a to 7d relate to a further embodiment of the tooth-cleaning device of the present invention wherein the main body comprises a deformable flat strip;

International Patent Application No. PCT/EP02/04544

Applicant: SKG ITALIA S.P.A.

PCT1604AP071te

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## NEW CLAIMS

1. A tooth-cleaning device (1) comprising a main body (2) and a plurality of bristles (3) carried by said main body,

said tooth-cleaning device comprising engaging means (4, 7) adapted to be engaged by the human tongue and allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue;

with said main body being adapted to receive a dispersible substance which is naturally dispersed during use;

said tooth-cleaning device being **characterized in that:**

said main body is impregnated with said dispersible substance.

2. A tooth-cleaning device as claimed in claim 1 **characterized in that** said dispersible substance is selected between a flavoring substance, a toothpaste, or a therapeutical substance.
3. A tooth-cleaning device as claimed in one of claims 1-2, **characterized in that** said engaging means comprise a receiving portion (4, 7) adapted to receive at least a portion of the tongue, allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue.
4. A tooth-cleaning device as claimed in claim 3, **characterized in that** said receiving portion comprises a receiving aperture (4) adapted to receive at least the end portion of the tongue;

allowing the tooth-cleaning device to be displaced within the mouth by means of the tongue.

5. A tooth-cleaning device as claimed in claim 4, **characterized in that** said main body is a hollow body comprising an inner cavity (7) defining said receiving portion, with said inner cavity communicating with the exterior through said receiving aperture.
6. A tooth-cleaning device as claimed in claim 5, **characterized in that** said hollow body has an approximately hollow cylindrical shape, defining an approximately cylindrical receiving portion.
7. A tooth-cleaning device as claimed in claim 5, **characterized in that** said main body has an approximately hollow thimble shape defining a tapered receiving portion.
8. A tooth-cleaning device as claimed in claim 5, **characterized in that** said main body has an approximately spherical hollow shape defining an approximately spherical receiving portion.
9. A tooth-cleaning device as claimed in claim 4, **characterized in that** said main body defines a trough hole (4) corresponding to said receiving aperture.
10. A tooth-cleaning device as claimed in claim 9, **characterized in that** said main body has an approximately ring or doughnut shape.
11. A tooth-cleaning device as claimed in claim 9, **characterized in that** said main body has an approximately square shape.
12. A tooth-cleaning device as claimed in claim 9, **characterized in that** said main body has an approximately polygonal shape with a predefined number of sides.

13. A tooth-cleaning device as claimed in one of claims 9 to 12, **characterized in that** said main body has a cross sectional shape approximately circular.
14. A tooth-cleaning device as claimed in one of claims 9 to 12, **characterized in that** said main body has an approximately square cross sectional shape.
15. A tooth-cleaning device as claimed in one of claims 9 to 12, **characterized in that** said main body has an approximately polygonal cross sectional shape with a predefined number of sides.
16. A tooth-cleaning device as claimed in one of claims 9 to 12, **characterized in that** said main body comprises a cylindrical surface (5) facing said through hole.
17. A tooth-cleaning device as claimed in claim 16, **characterized in that** said main body has a cross-sectional contour defined by a linear portion and a curved portion joined to said linear portion.
18. A tooth-cleaning device (1) as claimed in one of claims 1 to 2, **characterized in that** said main body (2) is deformable so that it can be shaped so as to form engaging means (4, 7) adapted to be engaged by the human tongue and allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue.
19. A tooth-cleaning device as claimed in claim 18, **characterized in that** said main body can be deformed so as to define a receiving portion (4, 7) adapted to receive at least a portion of the tongue, allowing said tooth-cleaning device to be displaced within the mouth by means of the tongue.

20. A tooth-cleaning device as claimed in claim 19, **characterized in that** said main body can be deformed so as to define a receiving portion comprising a receiving aperture (4) adapted to receive at least the end portion of the tongue, allowing the tooth-cleaning device to be displaced within the mouth by means of the tongue.
21. A tooth-cleaning device as claimed in claim 20, **characterized in that** said main body comprises a flat strip adapted to be deformed so as to define said receiving portion.
22. A tooth-cleaning device as claimed in claim 21, **characterized in that** said flat strip can be deformed into a body of an approximately cylindrical shape, defining an approximately cylindrical receiving portion.
23. A tooth-cleaning device as claimed in claim 21, **characterized in that** said flat strip can be deformed into a body of an approximately thimble shape defining a taper receiving portion.
24. A tooth-cleaning device as claimed in claim 20, **characterized in that** said flat strip can be deformed into a body of an approximately spherical shape defining an approximately spherical receiving portion.
25. A tooth-cleaning device as claimed in claim 20, **characterized in that** said main body comprises an elongated body of an approximately barrel-like shape, adapted to be deformed so as to define a through hole (4).
26. A tooth-cleaning device as claimed in claim 25, **characterized in that** elongated body can be deformed into an approximately ring-shaped or doughnut-shaped body.

27. A tooth-cleaning device as claimed in claim 25, **characterized in that** said elongated body can be deformed into an approximately square-shaped body.
28. A tooth-cleaning device as claimed in claim 25, **characterized in that** said elongated body can be deformed into an approximately polygonal shaped body with a predefined number of sides.
29. A tooth-cleaning device as claimed in one of claims 25-28, **characterized in that** said elongated body has a cross-sectional shape approximately circular.
30. A tooth-cleaning device as claimed in one of claims 25-28, **characterized in that** said elongated body has an approximately square cross-sectional shape.
31. A tooth-cleaning device as claimed in one of claims 25-28, **characterized in that** said elongated body has an approximately polygonal like cross-sectional shape with a predefined number of sides.
32. A tooth-cleaning device as claimed in one of claims 25-28, **characterized in that** said elongated body comprises a flat surface (5).
33. A tooth-cleaning device as claimed in claim 32, **characterized in that** said elongated body has a cross-sectional contour defined by a linear portion and a curved portion (5') joined to said linear portion.
34. A tooth-cleaning device as claimed in one of claims 1-33, **characterized in that** said main body comprises a contact area adapted to be contacted by the tongue, with said bristles being provided outside said contact area.

35. A tooth-cleaning device as claimed in one of claims 1-34, **characterized in that** said main body is formed by a resilient material and a string or cord is provided to be hand-held by the user, thus preventing accidental ingestion of the tooth-cleaning device..
36. A tooth-cleaning device as claimed in claim 35, **characterized in that** said resilient material is selected between gum, silicon, or resin.
37. A tooth-cleaning device as claimed in one of claims 1-36, **characterized in that** said body is inert, non-toxic and impervious to saliva.
38. A tooth-cleaning device as claimed in one of claims 1 to 37, **characterized in that** said main body comprises adhesion improving means (8) adapted to improve the adhesion of the tongue to the main body.
39. A tooth-cleaning device as claimed in claim 38, **characterized in that** said adhesion improving means comprise resilient protrusions extending from said main body.
40. A tooth-cleaning device as claimed in one of claims 1 to 39, **characterized in that** said bristles comprise bristles of at least two different lengths.
41. A tooth-cleaning device as claimed in one of claims 1 to 40, **characterized in that** said bristles comprise bristle tufts.
42. A tooth-cleaning device as claimed in one of claims 1-41, **characterized in that** said main body (2) and said bristles are at least partially embedded in a sweet or a drop (9) of a dispersible substance adapted to be dispersed by the human saliva.